provided data, the procedure proposed by AT&T and MCI is oxymoronic. By definition, a one-time expense is one that is unlikely to recur in the foreseeable future. In contrast, an average annual expense would recur every year. The annual average of the so called "non-recurring expenses" for all companies over a period of time proposed by AT&T and MCI is the expense that would be incurred every year by each company on average. The correct procedure would be to remove the identified non-recurring expenses for 1998 using company provided data and then add the average of such expenses found using 1993 to 1997 company data to account for the recurring portion of the non-recurring costs in 1998.

INCORRECT EXCLUSION OF RELEVANT MARKETING EXPENSES

20. The FCC has abandoned the factor developed by Economics & Technology, Inc. ("ETI") for calculating marketing expenses in favor of a totally new method.[11] GTE concedes that the procedure suggested by ETI suffered from certain methodological problems. However, the revised procedure adopted by the FCC also suffers from many methodological errors. The procedure adopted by the FCC calculates a proportional allocation of 1992 Massachusetts advertising expense to primary residence, single line business, and multi-line business based on 1998 national lines data to derive the share of marketing expenses to be allocated for high cost support.

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[11] Order at ¶¶ 403-407.

21. This approach is flawed for several reasons. First, it presupposes that Massachusetts expense data represents the national average. Second, it is inappropriate to use 1998 line data with 1992 expenses. The ratio of primary residence to total residence and single business to total business lines would surely be lower in 1998 compared to 1992. The Commission should have used 1998 expense data with 1998 lines. In the absence of a 1998 expense study, the FCC should use 1992 line data with 1992 expenses to arrive at a better estimate. This would be reasonable, since in a competitive environment, the ratio of primary residence to total residence and single business to total business lines may be lower, but the share of the expenses for local services in total advertising expenses is likely to be correspondingly higher, thus offsetting each other. The extent of the increased advertising that would be needed for local services in a competitive environment is demonstrated by the 1992 expense data that shows that more than 60% of the advertising expenses pertained to long distance advertising. This was so because in 1992 long distance was a competitive service while local service was not.

22. The FCC has excluded marketing expenses in accounts 6611 and 6612 on the grounds that "these marketing activities are not specifically required for support under Section 214 of the Communications Act and currently receive no high cost loop support."[12] Examination of the

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[12] Order at ¶ 407.

allocation description provided by ETI for accounts 6611 (product management) and 6612 (sales) reveal the following:

> Account 6611 - Product Management:
>
> Market Forecasting – the costs incurred to provide forecasts of current and future Residence and Business markets.
>
> Rates and Tariffs – the costs incurred to support: analyzing costs and revenues; interpreting customer trends, conditions, and the regulatory environment; developing rates, regulatory support and testimony.
>
> Market Management and Planning – the costs incurred to identify, quantify and plan for customer requirements for new or changed communication services.
>
> Account 6612 - Sales:
>
> This account contains the pay and other expenses primarily of personnel engaged in performing the functions of canvassing for new business or for changing or renewing existing service.[13]

23. While many of the services covered by the above two accounts may not have been part of the universal service fund in a regulated environment, most of them would be needed in a competitive environment. Hence, the portion of expenses in accounts 6611 and 6612 that would be needed for providing local service must be included in marketing expenses.

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[13] Massachusetts Cost of Service Study at p. 1-33 (attached to the ETI Study filed by National Cable Television Association Inc. in CC Docket No. 96-45 and referred to in the FCC's Further Notice of Proposed Rulemaking (rel. May 27, 1999) at ¶ 224.

I hereby swear, under penalty of perjury, that the foregoing is true and correct.

Subhendu Roy

Subhendu Roy

Subscribed and sworn to before me this 31st day of December 1999.

Lisa M Knight

Notary Public

LISA M. KNIGHT
Notary Public
My Commission Expires April 9, 2004

My Commission Expires: ______________________

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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Federal-State Joint Board on Universal Service	))	CC Docket No. 96-45
	)	
Forward-Looking Mechanism for High Cost Support for Non-Rural LECs	)))	CC Docket No. 97-160

AFFIDAVIT OF FRANCIS J. MURPHY IN SUPPORT OF GTE'S PETITION FOR RECONSIDERATION OF THE TENTH REPORT AND ORDER

Francis J. Murphy, being duly sworn, deposes and says as follows:

Introduction And Summary

1. I am the founder and president of Network Engineering Consultants, Inc. ("NECI"). NECI is a consulting group that specializes in financial analysis, service cost analysis, and engineering cost analysis of the telecommunications industry. We also provide telecommunications engineering services, expert testimony, and witness support for clients in both federal and state proceedings.
2. I have worked in the telecommunications industry for more than 28 years. In my present position, I have analyzed and evaluated telecommunications costing methodologies and models in support of universal service funding and the pricing of unbundled network elements. I have authored reports and provided expert testimony and witness support regarding recurring cost studies, non-recurring

cost studies, collocation cost studies, and avoided cost studies on behalf of my clients in approximately one dozen jurisdictions. My firm has provided expert testimony and witness support for the same models and studies in approximately 20 jurisdictions.

3. Prior to founding NECI, I was employed by NYNEX Corporation (now Bell Atlantic). During my tenure at NYNEX, I held a variety of positions. In my last NYNEX position, I was a staff director responsible for the costing of interstate services, including both recurring and non-recurring studies for existing and new services. I also had responsibility for calculating the exogenous costs associated with various Price Cap filings. Prior to that, I was responsible for calculating and reporting interstate rate of return results. Earlier in my career, I was a network operations manager. My responsibilities in that position included network operations and budget responsibilities that involved central office operations, interoffice facility operations, customer premise installations and maintenance operations, test center operations, and project management.

4. During the past three years, I have analyzed various versions of the HAI Model (previously the Hatfield Model), the AT&T Collocation Model, the Benchmark Cost Proxy Model ("BCPM"), the Hybrid Cost Proxy Model ("HCPM"), and the AT&T Non-recurring Cost Model. More recently, I have analyzed the so called "synthesis" model ("FCC Model " or "Model") adopted by the Federal Communications Commission ("FCC" or "Commission") in its Fifth Report and Order[1].

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[1] In the Matter of Federal State Joint Board On Universal Service, In the Matter of Forward-Looking Mechanism for High Cost Support for Non-Rural LECs, CC Docket Nos. 96-45, 97-160, *Fifth Report &*

5. On November 2, 1999, the Commission released its Tenth Report and Order ("Order").[2] Thereafter, NECI attempted to evaluate the inputs adopted by the Commission and the most recent release of the Model platform. A major focus of the evaluation was to determine: 1) if the Model's input assumptions and values, as promulgated in the Order, adhere to current non-rural telecommunications engineering standards and practices, 2) if the input values used by the Model are representative of GTE's network, and 3) if the inputs, in conjunction with the Model platform, develop "reasonably accurate estimates of forward-looking costs."[3]

6. Our evaluation of the Order has identified numerous methodological and theoretical inconsistencies, including the Commission's reliance upon unsupported data, the partial correction of problems, the adoption of Model parameters that are clearly unrepresentative of actual industry experience, and the disregard of commonly accepted planning and engineering practices employed by non-rural local exchange carriers ("LECs"). In the following sections of this affidavit, I report in more detail on each of these problems and why it is my opinion that some of the decisions reached by the Commission raise serious concerns about the reasonableness and accuracy of the costs developed from the Model's underlying assumptions and input values.

Order, FCC 98-279 (rel. Oct.28, 1998). This docket -- 96-45 and 97-160 -- is hereafter referred to and cited as the "Universal Service Cost Model Docket."

[2] Universal Service Cost Model Docket, FCC 99-304, *Tenth Report and Order* (rel. Nov. 2, 1999) ("Order").

[3] Order at ¶ 23.

The Commission's Use of RUS Data Is Inappropriate Because It Is Based On Data From Companies That Are Unlike The Companies For Which The FCC Model Develops Costs

7. The Commission has inappropriately concluded that the use of Rural Utilities Service ("RUS") data to develop the structure and cable cost inputs in the National Regulatory Research Institute ("NRRI") Study[4] "[i]s consistent with the objective of the model to identify the cost today of building an entire network using current technology."[5] The Commission supports this finding through flawed logic that vendor contracts based on consistent RUS engineering requirements outweigh the inefficiencies and inferior technologies that are reflected in the constructed facilities.[6]

8. The record in this proceeding has shown that the RUS engineering standards underlying the RUS contract data are for rural RUS borrowers, and are not the same engineering design standards employed by non-rural LECs.[7] In the affidavit that I filed on December 17, 1998, in support of GTE's Petition for Reconsideration of the FCC's Fifth Report and Order,[8] I commented on the inferior and non-forward looking technology present in the RUS data.

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[4] David Gabel, Scott Kennedy, *"Estimating the Cost of Switching and Cables Based on Publicly Available Data"*, National Regulatory Research Institute, April 1998 ("NRRI Study"). The NRRI Study purports to be based on publicly available data obtained through RUS and the FCC and used to provide cost estimates for placing outside plant facilities and digital switching equipment.

[5] Order at ¶ 118.

[6] Order at ¶ 117.

[7] *See "Bellcore Notes on the Network"*, Issue 3, December 1997, SR 2275, pages 12 – 17 and *"AT&T Outside Plant Engineering Handbook"*, August 1994, Section 13-1.

[8] Universal Cost Model Docket, *"Affidavit of Francis J. Murphy In Support of GTE's Petition For Reconsideration Of The Fifth Report And Order"* (December 17, 1998) at ¶¶ 56 - 58.

9. The Commission has now recognized that certain technologies underlying RUS engineering practices are not forward-looking, and therefore made cost adjustments to the RUS data. But those adjustments do not compensate for the fact that cable and structure costs on which substantial non-rural LEC investment is modeled are derived from data sources that are unlike the very companies for which the costs are being developed. Other serious concerns about the NRRI Study and RUS data are detailed in associated affidavits that support GTE's Petition for Reconsideration.[9] For these reasons, the Commission should reject these data and use in their place data proffered by the incumbent LECs.

The Commission's Adoption of the NRRI Study Data Reflects Arbitrary and Inconsistent Input Choices

10. The use of the NRRI Study and its underlying RUS data also illustrates several inconsistencies in the Commission's decision making and reasoning. These inconsistencies relate both to the use and the failure to use the Turner Price Index ("TPI") and nationwide values.

11. The outside plant files included as part of the NRRI Study show that the RUS data came from vendor contracts dating back to 1986, and were converted to 1997 price levels using the TPI. Significantly, the documentation indicates that although TPIs are available for different regions of the country, the index for the South Atlantic region was chosen to "simpl[ify] things."[10] The record does not establish why the use of the South Atlantic region TPI is a reasonable proxy for establishing a nationwide estimate. Further, the Commission dismissed use of

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[9] *See* Affidavit of Jason Zhang and Affidavit of Subhendu Roy attached to GTE's Petition for Reconsideration of the Tenth Report and Order.

[10] NRRI Study at p. 1 of file named PKTMP000.txt.

the TPI that GTE and Ameritech earlier advocated as a means of converting embedded cost to current data, claiming that the index and data underlying it were not part of the public record.[11]

12. The NRRI Study contains another example of inconsistent reasoning by the Commission. Although the NRRI Study used data obtained from a Bell Atlantic - Maine unbundled network element proceeding to develop a buying power adjustment, the Commission apparently did not consider the full record when deciding to use the NRRI Study results to develop a fiber splicing adjustment. In the Maine proceeding, Bell Atlantic testified that RUS fiber splicing costs were inordinately low. Yet, the NRRI Study's authors virtually ignored this testimony, mentioning it only briefly in a footnote, and instead used the data to develop the fiber splicing adjustment that was ultimately adopted by the Commission in the Order.[12]

The FCC Model Ignores Standard Outside Plant Engineering Practices And Fails to Build A Distribution Network That Serves All Users

13. The "industry practice" of building distribution plant to meet ultimate demand is based on engineering standards that were developed and have been used by the "non-rural" LECs for which the Model attempts to develop costs. However, the Commission concluded in the Order "that the fill factors selected for use in the federal mechanism generally should reflect current demand, and not reflect the industry practice of building distribution plant to meet ultimate demand."[13] The Commission alleged that basing fill factors on ultimate demand could create

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[11] Order at ¶ 314.

[12] NRRI Study at fn. 46.

excess capacity that "would increase the model's cost estimates to levels higher than an efficient firm's cost[s]."[14] This statement wrongly implies that commonly accepted outside plant engineering practices cause inefficiencies. That is certainly not the case. Both AT&T's outside plant guidelines[15] and RUS guidelines[16] support the industry practice of building to ultimate demand.

14. AT&T's "Interfaced Cable Guidelines," which are the accepted industry standard for sizing distribution cable, dictate that distribution cables be sized for the "ultimate" pair requirements. The accepted engineering standard for pair allocations is two pairs per living unit for residential areas, and five pairs per business unit for distribution areas serving business customers. This standard ensures that there is sufficient spare capacity to handle growth, as well as administration and maintenance functions. The Commission, however, has adopted fill factors that ignore the existence of currently (or temporarily) unoccupied households. As a result, the distribution network designed by the Model does not produce sufficient capacity for growth, administration, or maintenance functions. Therefore, customers who relied on the network produced by the Model would experience lengthy delays in receiving service due

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[13] Order at ¶ 190.

[14] Order at ¶ 200.

[15] AT&T OSPE Handbook, pp. 3-11.

[16] Christopher McLean, *RUS Ex Parte* (dated August 20, 1999). ("This redesign followed other design assumptions of the HCPM, such as designing only to existing customer locations, rather than following the established (and prudent) RUS practice of designing for future customer locations which might be a short distance down the road so as not to have to place a new CSA to serve that probable subscriber in the future.")

to the need to provision additional service capacity. This is a time consuming and costly process not accounted for in the Model.

15. The Commission has presented no engineering evidence that building to ultimate demand is inappropriate when determining forward-looking costs. Quite to the contrary, the record suggests that the Commission has clearly erred in its application of distribution fill factors to line counts that are based on current demand only.[17] Distribution plant should be sized according to established engineering standards and practices that are used by the companies for which the Model is attempting to develop costs.

16. Despite the absence of evidence that the "industry practice" is inefficient, the Commission chose to forego the inherent efficiencies of having distribution plant available at each living unit in a distribution area. In order to capture these efficiencies and avoid the expense and delays associated with pair-by-pair provisioning of distribution plant, the Commission should design the distribution plant according to AT&T's "Interfaced Cable Guidelines" and avoid use of an artificial distribution fill factor in the Model.

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[17] Order at ¶ 199.

The FCC Model Fails to Recognize That Resources Are Required Even When Housing Units Are Unoccupied

17. The Model also violates the directives of the Fifth Report and Order to follow sound economic engineering design[18] and the directives of the Commission's Sixth Cost Model Criterion, which requires that a "[m]odel must estimate the cost of providing service for all businesses and households within a geographic region."[19] For example, the Commission's decision to build only to occupied living units[20] ignores households equipped with warm or express dial tone, which enables new occupants to contact local emergency services (E911) or order telephone service.[21] Census data indicate that over 11% of dwellings are vacant because a large number of households are constantly relocating.[22] As a result, many of these vacant housing units will have warm or expressed dial tone.[23] The FCC Model ignores the cost of serving these households despite the investment that companies have made to place and maintain these facilities.

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[18] 5th Report & Order at ¶¶ 30 & 61.

[19] Order at ¶ 49 citing *Universal Service Order,* 12 FCC Rcd at 8915, ¶ 250 (criterion 6).

[20] Order at ¶¶ 48 & 50.

[21] Some companies also call warm or express dial tone left-in dial tone. Whenever service on a primary line to a living unit is disconnected, the serving feeder and distribution pairs are left physically connected and a software change is made at the serving wire center to leave dial tone on the line. Access is generally restricted to E911 and in some companies, to the business office as well.

[22] Census Bureau statistics show that 13.7 million housing units are vacant (11.7% of all households) of which 10.4 million (or 76%) were classified as year-round use. United States Department of Commerce News, CB 98-58, April 21, 1998.

[23] GTE provides warm or express dial tone in CA, FL, HI, ID, KY, OR, and WA.

The Commission Inappropriately Dismisses The Need For Sufficient Plant Capacity

18. It is important to recognize that a company's readiness to provide service quickly to new customers is necessary in a competitive environment. AT&T, in a capacity study done in 1990, recognized that its competitors maintained extra capacity in their networks to enable them to absorb new customers and increase market share quickly.[24] To do less would be self-defeating because customers would not accept long delays before their new service provider activated its service.

19. Although the applicability of RUS engineering standards to the non rural LECs has already been challenged, it is interesting to note in this instance that the Commission, while embracing RUS data for its consistent engineering standards, rejects the standards themselves. The RUS, in an ex parte on June 11, 1998, addressed the need to ensure there is sufficient outside plant available to meet present and future customer needs including unoccupied households: "The intent of the universal service provisions of the Act of 96 is to maintain and extend universal service . . . Therefore, a model which builds only to households that already have telephones is not compliant with the intent of the Act. A model must reflect the reality that the eligible carrier is required to provide service upon request. This means that plant must be built which is capable of providing

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[24] Blake, V.A., Flynn, P.V., Jennings, F.B., AT&T Bell Laboratories, *"A Study of AT&T's Competitors' Capacity to Absorb Rapid Demand Growth"*, (dated June 20, 1990) filed in CC Docket No. 90-132.

service to every habitable housing unit."[25] The RUS rejected the Commission's flawed assumption again in an ex parte session on August 20, 1999.[26]

The Commission's Decision To Base Forward-Looking Structure Sharing Percentages On Predictive Judgment Is Entirely Inappropriate

20. The Commission has also erred by adopting inputs for structure sharing based on the Commission's own predictive judgment rather than actual structure sharing percentages and observations.[27] Actual structure sharing experiences are the most representative values of future sharing opportunities and forward-looking costs. Since no more valid evidence of future structure sharing has been provided to the Commission, the Commission should have adopted current incumbent LEC structure sharing percentages instead of relying on unsupported and unverifiable judgment.

The Commission Fails To Use An Appropriate Plant Mix

21. The Commission's nationwide average values for plant mix fail to capture either the forward-looking or embedded costs actually incurred for structure placement. Plant mix is highly dependent upon local factors, such as terrain, elevation, weather, and municipal requirements, which vary significantly across the country and produce large variations between study areas. State-by-state data gathered by the FCC and shown in Attachments A, B, and C to this affidavit summarize

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[25] Wally Beyer, *RUS Ex Parte* (dated June 1, 1998).

[26] Christopher McLean, *RUS Ex Parte* (dated August 20, 1999).

[27] Universal Service Cost Model Docket, *"Comments of GTE Service Corporation And Its Affiliated Domestic Telephone Operating Companies In Response to Further Notice Of Proposed Rulemaking,"* (dated July 23, 1999) at p. 56, Section 4 ("GTE Comments").

outside plant statistics for the reporting LECs.[28] These statistics demonstrate that significant state variations in plant mix exist in comparison to the national averages of 32% for aerial cable, 12% for underground cable, and 55% for buried cable.[29] For example, the percentage of aerial plant ranges from 91% in Maine to only 3% in North Dakota. Conversely, the mix shifts to 92% for buried plant in North Dakota and only 4% in Maine.

22. This variation in plant mix supports the incumbent LECs' engineering and construction practice of optimizing the mix of outside plant to reflect local geological factors and other requirements. These data argue strongly that a national value is unrepresentative of any LECs' actual plant mix, and is inappropriate for use in the Model. Instead, the Commission should, at a minimum, use a state-specific (if not company-specific) plant mix input.

The Commission Model Uses Different Costs For The Same Item In Different Modules

23. The FCC has not ensured that the input values used in the loop portion of the Model are consistent with the input values used in the switch and interoffice module adopted from the HAI Model. For example, the Model uses an installed cost of $3.50 per foot for interoffice fiber cable while using $1.79 for fiber cable to develop its loop plant. There is no rational basis for using different default values for the same fiber cable.

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[28] "*1998 Statistics of Communications Common Carriers*", FCC Common Carrier Bureau (dated December 3, 1999) at Table 2-2.

[29] The plant mixes shown on the attachments are provided solely to illustrate the variation between states. The values shown in the attachments might not be readily integrated into the Model to reflect state or company-specific values by density zone.

24. Similarly, the interoffice pole material and labor costs, set at the HAI Model default values, do not appear to have been updated to reflect the aerial structure costs in the loop portion of the FCC Model. These errors appear to have occurred as a result of cobbling together modules from different cost models without cross referencing all adopted input values. The result of this error is incorrect cost estimates.

The FCC Improperly Accounts for DS1 Economies

25. The FCC Model understates the cost of provisioning switched business traffic and special access lines. In setting input values for pct_ds1 and pct_1sa in the Model, the Commission chose to take advantage of the fact that a certain percentage of switched business traffic and special access lines are provided over digital facilities. The Model uses these inputs to adjust the wire center cable requirements by reducing the facilities needed to serve multi-line business and special access customers, "thus lowering overall cost of the modeled loop plant."[30] At the same time, the Model uses a value of 18,000 feet for the maximum allowable copper loop length. In order to provide the switched business and special access circuits over 2 copper pairs instead of 24 beyond 12,000 feet in length, HDSL technology with doublers is required.[31] Since the Model fails to include any cost for HDSL technology, it should not be designed to

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[30] Order at ¶ 100.

[31] It is clear from paragraph 206 of the Order that the Commission intends to leave the cost of multi-line business services and multiple residential lines in the Model since "[t]he Commission has never acted on the recommendation in the First Recommended Decision that only primary residential lines should be supported." Furthermore, "[s]uch inclusion of multi-line business services and multiple residential lines will permit the cost study or model to reflect the economies of scale associated with the provision of these services."

take advantage of the associated pair cost reduction. In order to correct this problem, the Commission should reduce the maximum copper loop length to 12,000 feet, in compliance with the industry's established CSA guidelines.[32]

The Commission Relies Upon Unsupported Information To Determine The Switch Fill Factor

26. The switching administrative fill factor of 94% adopted by the Commission is based on a misinterpretation of the evidence and a disregard for incumbent LEC practices and experience.[33]

27. It appears that the Commission erred in its interpretation of the BCPM model documentation, which referred to a much more reasonable value for switch fill of 88%.[34] In an engineering context, the standard central office engineering guidelines provide for adding line equipment when the administrative fill level is reached. The day after the line equipment has been added, the switch line fill level will drop to a lower level. The appropriate administrative fill value to use for a network cost model is a value that approximates the mid-point between just before and just after additional line capacity is added. However, the FCC has implied that because the BCPM used the phrase "allowances for growth" in its definition of switch fill, the BCPM's value must be overly conservative and too low.[35]

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[32] On May 6, 1998, I met with representatives from Commissioners Powell's, Ness's, Tristani's and Furchtgott-Roth's offices to discuss the design of the federal universal service mechanism. In this meeting, I discussed the requirement that loop lengths must comply with the CSA standards for costs to be accurate.

[33] Order at ¶ 332.

[34] *Id.*.

[35] Order at ¶ 332. ("The BCPM model documentation established a switch line fill default value of 88 percent that included "allowances for growth over an engineering time horizon of several years.")

28. The HAI Model introduced the term "administrative fill" and used it to represent average switch fill. The hypothetical input value of 98% used by the HAI Model was based on the unsupported, unverifiable opinions of experts.[36] The FCC has erred by opting to choose an "administrative switch fill" value between the conservative value of 88% in the BCPM and the totally unsupported hypothetical administrative fill value of 98% in the HAI Model. They wrongly ignore the position and values put forth by Bell Atlantic, Sprint, and U S WEST that represent non-rural company practices and experience.[37] While alleging these LECs' numbers lacked substantiated evidence, they justify their choice of 94% because it represents a middle point between the BCPM value of 88% and the totally unsubstantiated HAI Model value of 98%.

29. Instead of erroneously basing their decision on an upper value that has no basis in fact, the FCC should at least select an administrative switch fill value that is between the 78% and 88% values proffered by the incumbent ILECs.

Significant Switch And IOF Investment Is Unaccounted For By The FCC Model

30. The FCC recognized there were inconsistencies between the local switch investment and the interoffice trunking (transport) investment in the Model, and therefore deactivated the computation in the switch module that reduces the end office investment.[38] However, deactivation of this switch module computation only partially corrected the problem since the underlying fault of the Model to

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[36] HAI 5.0a, Inputs Portfolio at p. 73, Section 4.1.4.

[37] Order at ¶ 331.

[38] Order at ¶¶ 333 – 337.

design adequate interoffice trunks is still not corrected. Both GTE and the BCPM sponsors provided solutions to this underlying problem, which the Commission failed to address.

31. The Model reflects a 6:1 line-to-trunk ratio for the local switching portion of the network, while designing a much higher line-to-trunk ratio (10:1 to 14:1) for the tandem and interoffice portions of the network. This higher line-to-trunk ratio causes the Model to calculate insufficient interoffice facilities, tandem trunks, and tandem switching, and the electronics supporting the trunk network. While deactivation of the switch module computation corrects the problem with end office investment, the remaining portion of the problem causes tandem switching and transport investments and costs to be seriously understated. Additionally, the network designed by the Model using these transport assumptions will produce call blockages because of insufficient interoffice and tandem facilities.[39]

The Commission's Use Of The Buying Power Adjustment Causes Costs To Be Understated

32. The Commission ignored the record and inappropriately adopted the proposed buying power adjustments for fiber and copper cable developed in the NRRI Study.[40] The FCC addressed and dismissed concerns raised by commenters, including GTE, relating to the proposed adjustments. However, absent from the FCC's discussion of the concerns raised by commenters in paragraphs 146-163 in the Order is any mention of the RUS comments that also undermine the

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[39] Order at ¶ 12 ("a telephone network must...ensure that adequate capacity exists in the switching facility to process all customer calls that are expected to be made at peak periods, and then interconnect that switching facility with other switching facilities to route calls to their destination.").

[40] Order at ¶ 148.

appropriateness of the adjustment. It is RUS data that was used in the NRRI Study to develop the buying power adjustments. Yet, RUS Commentors explained, in an ex parte dated August 20, 1999, that a buying power adjustment would be "imprudent."[41]

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[41] Christopher McLean, RUS Ex Parte, August 20, 1999.

I declare under penalty of perjury that the foregoing is true and correct.

Francis J. Murphy

Subscribed and sworn before me this 29th day of December, 1999.

Melissa M Murphy

Melissa M. Murphy
Notary Public

My Commission Expires: 5/12/00

Attachment A

1998 Outside Plant
Statistics Sorted By % Aerial Plant

STATE	% Aerial	% Underground	% Buried
MAINE	91%	4%	4%
VERMONT	85%	6%	10%
NEW HAMPSHIRE	83%	8%	9%
RHODE ISLAND	73%	20%	7%
PENNSYLVANIA	71%	10%	18%
CONNECTICUT	71%	18%	10%
HAWAII	67%	30%	2%
WEST VIRGINIA	66%	3%	30%
MASSACHUSETTS	66%	26%	9%
PUERTO RICO	63%	16%	21%
NEW JERSEY	61%	24%	15%
KENTUCKY	60%	6%	34%
NEW YORK	52%	20%	28%
TENNESSEE	49%	7%	44%
MARYLAND	48%	12%	41%
OHIO	45%	11%	44%
CALIFORNIA	38%	32%	30%
ALABAMA	36%	6%	58%
MISSISSIPPI	35%	3%	62%
GEORGIA	34%	9%	57%
VIRGINIA	34%	7%	59%
UNITED STATES	32%	12%	55%
DELAWARE	31%	11%	58%
OREGON	29%	15%	56%
DIST. OF COLUMBIA	28%	69%	2%
INDIANA	27%	9%	65%
WASHINGTON	26%	16%	58%
NORTH CAROLINA	26%	5%	69%
LOUISIANA	25%	9%	66%
NEVADA	24%	33%	43%
NEW MEXICO	22%	8%	70%
TEXAS	22%	11%	68%
MICHIGAN	20%	12%	68%
MISSOURI	20%	7%	73%
ARIZONA	18%	18%	64%
FLORIDA	17%	13%	70%
ILLINOIS	17%	15%	68%
UTAH	16%	18%	66%
WISCONSIN	16%	8%	76%
SOUTH CAROLINA	15%	8%	77%
COLORADO	13%	15%	72%
ARKANSAS	12%	4%	84%
OKLAHOMA	11%	7%	83%
MONTANA	10%	4%	86%
IDAHO	9%	6%	84%
KANSAS	9%	7%	84%
MINNESOTA	8%	14%	78%
WYOMING	5%	4%	91%
IOWA	5%	5%	90%
NEBRASKA	4%	5%	91%
SOUTH DAKOTA	4%	5%	91%
NORTH DAKOTA	3%	5%	92%
TOTAL	32%	12%	55%

Attachment B

1998 Outside Plant Statistics
Sorted By % Underground Plant

STATE	% Aerial	% Underground	% Buried
DIST. OF COLUMBIA	28%	69%	2%
NEVADA	24%	33%	43%
CALIFORNIA	38%	32%	30%
HAWAII	67%	30%	2%
MASSACHUSETTS	66%	26%	9%
NEW JERSEY	61%	24%	15%
RHODE ISLAND	73%	20%	7%
NEW YORK	52%	20%	28%
CONNECTICUT	71%	18%	10%
UTAH	16%	18%	66%
ARIZONA	18%	18%	64%
WASHINGTON	26%	16%	58%
PUERTO RICO	63%	16%	21%
OREGON	29%	15%	56%
ILLINOIS	17%	15%	68%
COLORADO	13%	15%	72%
MINNESOTA	8%	14%	78%
FLORIDA	17%	13%	70%
UNITED STATES	32%	12%	55%
MICHIGAN	20%	12%	68%
MARYLAND	48%	12%	41%
DELAWARE	31%	11%	58%
OHIO	45%	11%	44%
TEXAS	22%	11%	68%
PENNSYLVANIA	71%	10%	18%
INDIANA	27%	9%	65%
LOUISIANA	25%	9%	66%
GEORGIA	34%	9%	57%
NEW MEXICO	22%	8%	70%
WISCONSIN	16%	8%	76%
SOUTH CAROLINA	15%	8%	77%
NEW HAMPSHIRE	83%	8%	9%
VIRGINIA	34%	7%	59%
TENNESSEE	49%	7%	44%
KANSAS	9%	7%	84%
MISSOURI	20%	7%	73%
OKLAHOMA	11%	7%	83%
IDAHO	9%	6%	84%
KENTUCKY	60%	6%	34%
VERMONT	85%	6%	10%
ALABAMA	36%	6%	58%
SOUTH DAKOTA	4%	5%	91%
IOWA	5%	5%	90%
NORTH CAROLINA	26%	5%	69%
NEBRASKA	4%	5%	91%
NORTH DAKOTA	3%	5%	92%
MAINE	91%	4%	4%
ARKANSAS	12%	4%	84%
MONTANA	10%	4%	86%
WYOMING	5%	4%	91%
WEST VIRGINIA	66%	3%	30%
MISSISSIPPI	35%	3%	62%
TOTAL	32%	12%	55%

Attachment C

1998 Outside Plant
Statistics Sorted By % Buried Plant

STATE	% Aerial	% Underground	% Buried
NORTH DAKOTA	3%	5%	92%
WYOMING	5%	4%	91%
NEBRASKA	4%	5%	91%
SOUTH DAKOTA	4%	5%	91%
IOWA	5%	5%	90%
MONTANA	10%	4%	86%
IDAHO	9%	6%	84%
KANSAS	9%	7%	84%
ARKANSAS	12%	4%	84%
OKLAHOMA	11%	7%	83%
MINNESOTA	8%	14%	78%
SOUTH CAROLINA	15%	8%	77%
WISCONSIN	16%	8%	76%
MISSOURI	20%	7%	73%
COLORADO	13%	15%	72%
FLORIDA	17%	13%	70%
NEW MEXICO	22%	8%	70%
NORTH CAROLINA	26%	5%	69%
MICHIGAN	20%	12%	68%
ILLINOIS	17%	15%	68%
TEXAS	22%	11%	68%
LOUISIANA	25%	9%	66%
UTAH	16%	18%	66%
INDIANA	27%	9%	65%
ARIZONA	18%	18%	64%
MISSISSIPPI	35%	3%	62%
VIRGINIA	34%	7%	59%
DELAWARE	31%	11%	58%
ALABAMA	36%	6%	58%
WASHINGTON	26%	16%	58%
GEORGIA	34%	9%	57%
OREGON	29%	15%	56%
UNITED STATES	32%	12%	55%
TENNESSEE	49%	7%	44%
OHIO	45%	11%	44%
NEVADA	24%	33%	43%
MARYLAND	48%	12%	41%
KENTUCKY	60%	6%	34%
WEST VIRGINIA	66%	3%	30%
CALIFORNIA	38%	32%	30%
NEW YORK	52%	20%	28%
PUERTO RICO	63%	16%	21%
PENNSYLVANIA	71%	10%	18%
NEW JERSEY	61%	24%	15%
CONNECTICUT	71%	18%	10%
VERMONT	85%	6%	10%
NEW HAMPSHIRE	83%	8%	9%
MASSACHUSETTS	66%	26%	9%
RHODE ISLAND	73%	20%	7%
MAINE	91%	4%	4%
HAWAII	67%	30%	2%
DIST. OF COLUMBIA	28%	69%	2%
TOTAL	32%	12%	55%